

W. H. JUMP.
GRAIN DOOR.
APPLICATION FILED JAN. 15, 1910.

Patented Oct. 4, 1910.
3 SHEETS—SHEET 1.

971,617.

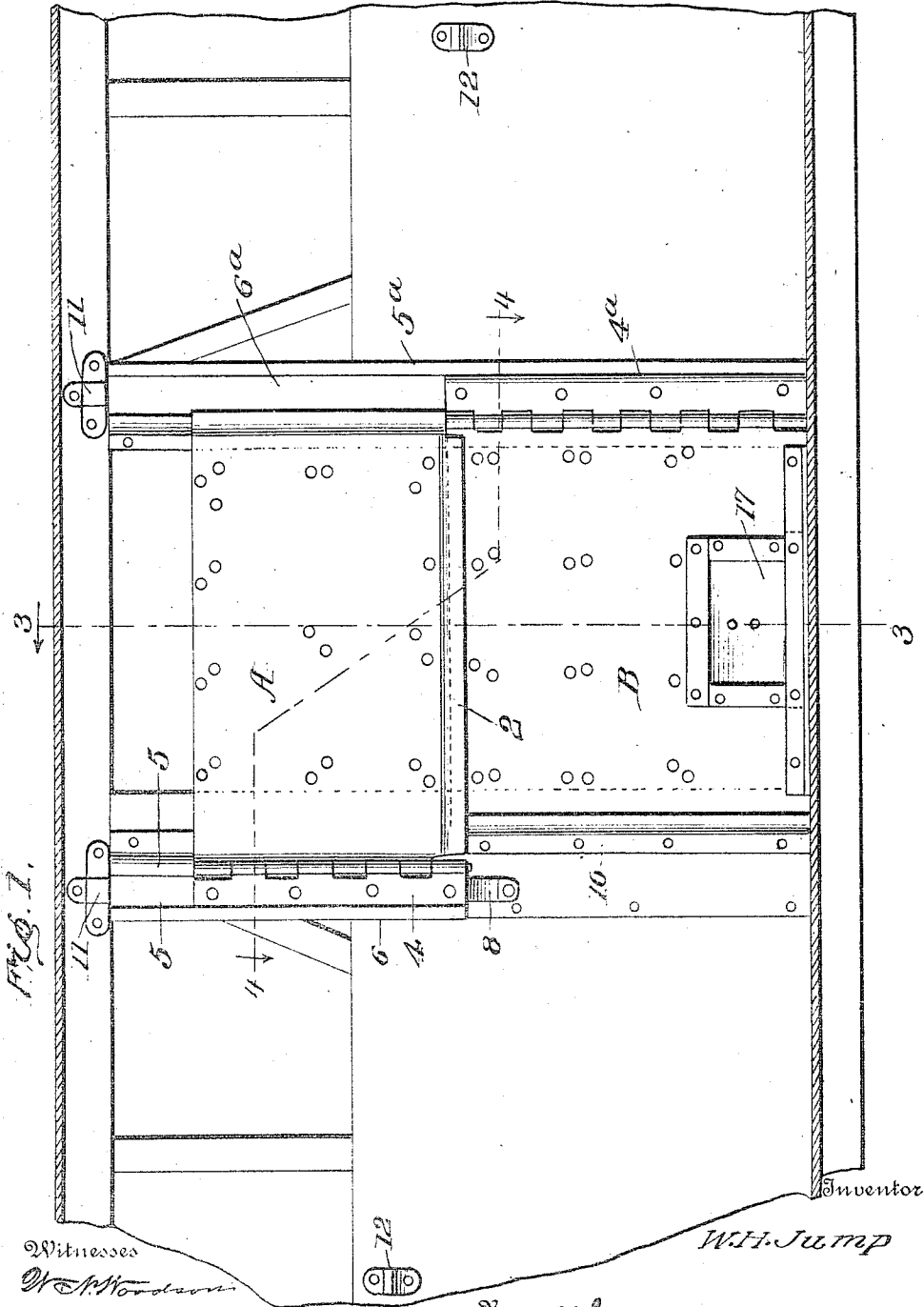


Fig. 1.

Witnesses
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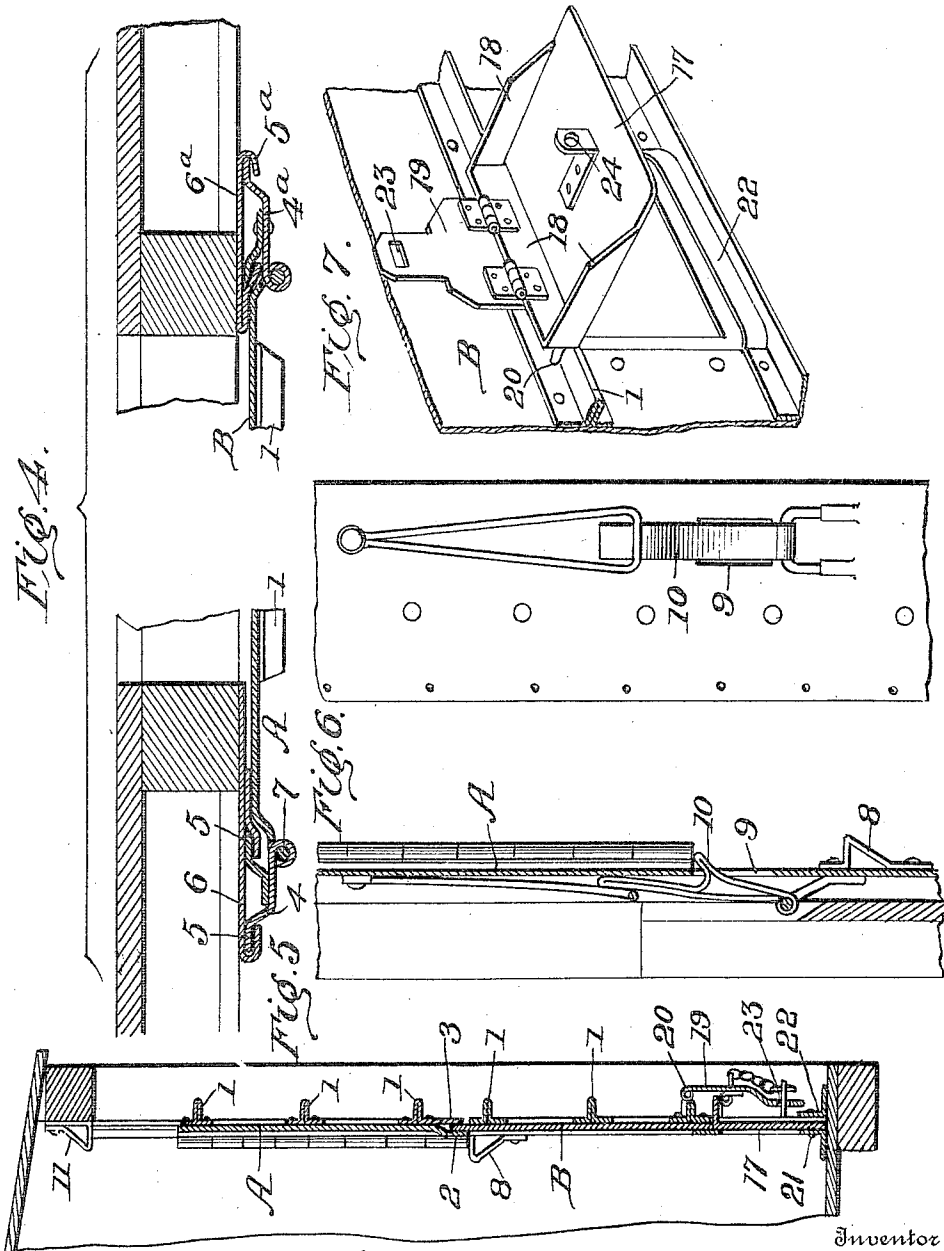
GRAIN DOOR.

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3 SHEETS—SHEET 3.

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Witnesses
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FIG. 3.

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UNITED STATES PATENT OFFICE.

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GRAIN-DOOR.

971,617.

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To all whom it may concern:

Be it known that I, WALTER H. JUMP, citizen of the United States, residing at Carroll, in the county of Carroll and State of Iowa, have invented certain new and useful Improvements in Grain-Doors, of which the following is a specification.

This invention comprehends certain new and useful improvements in grain doors for cars and is designed particularly for use in connection with those cars that are designed for the shipment of grain, coal, coke, or other granular substances and the invention has for its primary object a simple, durable and efficient construction of door of this character which will be strong and durable and yet capable of being easily manipulated by one man, and which will be grain tight in use. And the invention also has for its object an improved grain door embodying upper and lower door sections which are swung from opposite sides of the door casing to open back against the inside of the car by swinging the sections in opposite directions to each other and which, when closed over the doorway will tightly seal the same, not only at the threshold of the door but at the joints of the jambs and sections, and at the joints between the upper and lower sections of the door.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a side elevation of a grain door constructed in accordance with my invention; Fig. 2 is a similar view with the door sections thrown open and in elevated position; Fig. 3 is a vertical transverse sectional view on the line 3—3 of Fig. 1; Fig. 4 is a horizontal sectional view, the section being taken substantially on the broken line 4—4 of Fig. 1; Fig. 5 is a detail sectional view on the line 5—5 of Fig. 2; Fig. 6 is a detail view illustrating one of the spring latches which may be employed; and, Fig. 7 is a perspective view of a relief panel showing the same in open position.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to the drawings A and B designate respectively upper and lower door sections of my improved freight car door, said sections being made of preferably light sheet steel or the like, and being provided, say on their outer faces with transversely extending longitudinally crimped sheet metal reinforcing bars 1 connected thereto. Any desired number of these bars may be employed and they may be riveted or secured to the main body portion of the door section in any desired way.

In order to secure a tight joint between the lower edge of the upper door section A and the upper edge of the lower door section B, the first mentioned edge is slightly off-set, as indicated at 2, and the adjacent reinforcing bar is extended downwardly substantially flush with the off-set edge, as indicated at 3, in order to receive between them the upper edge of the lower door section and interlock the edges to make the joints grain tight at this point.

The door section A is hinged at one vertical edge to the attaching strip 4, the same being transversely arched as shown and consisting of two preferably metal vertically extending strips, having their edges overlapping and riveted or otherwise secured together, said attaching strip 4 being mounted for vertical movement in a channel that is formed by the inturned flanges 5 of a jamb-plate 6. The edge of one of these overlapping strips is formed into a plurality of knuckles 7 which coast with a plurality of corresponding knuckles formed on the edge of the door section to receive a pintle rod on which said section is swung. It is to be noted that the flanges 5 terminate short of the floor of the car, preferably at about a point one-half way between the floor and the roof of the car, and that there is secured to the jamb plate 6 just underneath the lower open end of the flanges 5, a bracket 8 designed to be engaged by the attaching strip 4 in the lowermost position of the upper door section A whereby to support such section at the lower limit of its movement. In order to support the upper door section A in a more elevated position,

I have formed an opening 9 in the jamb plate 6 and mounted in said opening is a laterally spring pressed latch 10 designed to engage the lower edge of the attaching strip 4. The lower door section B is correspondingly connected to a correspondingly formed attaching strip 4^a mounted for a vertical sliding movement in a channel formed by the intumed flanges 5^a of a jamb strip 6^a. The flanges 5^a extend, as shown, substantially from the floor to the roof of the car so as to admit of a greater vertical movement of the lower door section than the upper door section, and to hold the lower door section at the upper limit of its movement, I have provided a spring latch 10^a substantially like the spring latch 10 before described, said latch 10^a being designed for engagement with the lower edge of the strip 4^a. Both of the attaching strips are prevented from being lifted too high, by means of stops 11 which are secured to the side of the car above the jamb strips 6, 6^a; in order to assist in holding the door sections in their elevated positions, rests or ledge plates 12 are secured to the side of the car at opposite sides of the doorway as clearly illustrated in the drawing.

The channel of the jamb 6 and the channel of the jamb plate 6^a lie in the same vertical plane, said plane extending across the doorway parallel to the plane thereof, the said jamb plates being secured to the inner wall of the door frame on opposite sides of the doorway. Hence it is evident that the door sections A and B move up and down in the same vertical plane when they are in their relatively closed position, the attaching strips also moving vertically in a vertical plane in transverse alinement with each other, and when the door sections are closed, one above the other, the upper door section practically forms a continuation of the lower door section, both sections lying in the same vertical plane.

In order to hold the upper door section from swinging inwardly at its upper edge I have mounted a latch 13 in a bracket plate 14 which is secured to the upper door section on the outer face thereof, the latch being provided with a handle and being designed for engagement with a keeper plate 15 secured to one side face of the opposite door jamb.

The lower door section B is held in place, in the closed position of the door section not only by being engaged by the lower edge of the upper door section and the extension 3 of one of the reinforcing bars 1, but by a plate or strip 16 which projects in a direction opposite to that in which the adjacent flange 5 projects, just above it, and which is secured to the jamb plate and which is below the flanges 5 is designed to be engaged with the relatively free edge of the lower door

section, the latter being slipped back of the flange of said strip 16 when the lower door section is dropped.

17 designates the relief panel or unloading door. This is also preferably constructed of sheet metal with flanged side and top edges as indicated at 18 in order to strengthen or reinforce it, and it is pivotally connected to a hasp 19 which is swung from a staple 20 or the like secured to the lower door section and projecting outwardly from the outer face thereof. The lower edge of the relief panel 17 is extended to slip between angular reinforcing strips 21 and 22 which are secured to the lower door section at the lower edge thereof, said strips serving to seal the joint at the threshold or sill of the doorway. The hasp 19 is formed with an eye 23 which in the closed position of the hasp accommodates an aperture ear 24, a locking key 25 being then slipped through the ear to lock the relief panel in closed position.

From the foregoing description in connection with the accompanying drawings, the operation of my improved freight car door will be apparent. In the practical use of the device in the closed position of the door sections, the lower door section has been swung across the doorway and lowered so that its relatively free edge will be slipped back of the flange of the strip 16. The relief panel is closed and locked in place, and to complete the sealing of the doorway, the upper door section is swung across the same, into vertical alinement with the lower door section and is then lowered so as to engage the upper edge of the lower section, the latch or bolt being then shot into place. To open the door, it may be necessary to first open the relief panel or unloading door 15. But in any event, the upper door section A is unlocked and raised so as to disengage it from the upper edge of the lower door section, the said upper section being raised until its attaching strip 4 has been engaged by the latch 10, whereupon the upper door section will be held in its relatively elevated position and may be swung inwardly to rest against the inner side of the car, with its free end resting upon the adjacent bracket plate 12. The lower door section B is then also raised until its attaching strip 4^a is caught by the latch 10^a and the lower door section may then be swung inwardly and in an opposite direction to the upper door section and lie against the side of the car with its free end resting upon the adjacent bracket plate or ledge 12.

Having thus described the invention, what is claimed as new is:

1. A grain door comprising upper and lower door sections each formed on one edge with a plurality of hinge knuckles, attaching strips for each door, each of said attaching

strips consisting of two vertically extending strips having their edges overlapping and the overlapping edges secured together, the opposite edge of one of said overlapped strips being formed with knuckles alternating with and hingedly connected to the knuckles of an adjacent door section, two pairs of vertically extending flanges connected to the inner side of the car at opposite sides of the door-way thereof, the flanges of each pair being spaced from each other and projecting toward each other whereby to produce vertical channels, the attaching strips being mounted to move vertically in said channels, whereby the door sections may swing in opposite directions away from the door-way, and means secured to the inner side of the car for holding said door sections in elevated and open position.

2. The combination with a car provided with a door-way, two pairs of flanges secured to the inner side of the car at opposite sides of the door-way, the flanges of one pair extending from the top of the door-way down to a point short of the floor of the car, while the flanges of the other pair project from the top of the door-way down to the floor of the car, a flange strip secured to the inner side of the car at one side of the door-way in vertical alinement with one of the first named flanges, the flange of said strip extending in a direction opposite to the

flange underneath which it is mounted, attaching strips mounted to move vertically between the flanges of the respective pairs, door sections hingedly connected to the respective attaching strips and arranged in closed position to be locked one above the other, the normally lower section being adapted to slip back of the flange strip above mentioned, for the purpose specified.

3. The combination with a car and its door-way, of jamb plates connected to the inner side of the car at opposite sides of the door-way, said jamb plates being formed with slots, and provided with flanges on opposite sides of the slots, attaching strips mounted for a vertical movement in said channels, upper and lower door sections hingedly connected to the respective strips to swing in opposite directions away from the door-way, and spring latches mounted behind the jamb plates and adapted to protrude forwardly through the slots thereof into engagement with the lower end of the door sections whereby to hold the same open in an elevated position.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER H. JUMP. [l. s.]

Witnesses:

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